

Remarks

Claims 1, 7-9, 13, 15, and 17-29 are pending in the present application.

35 U.S.C. § 103 (Non-obviousness)

All pending claims 1 7-9, 13, 15, and 17-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. (The Journal of Cell Biology, 143:1183-1199, 1998, the “Jiang reference”) in view of Zheng et al. (Plant Physiol., 109:777-786, 1995, the “Zhang reference”) and Goddijn et al. (Trends Biotechnol. 13:379-387, 1995, the “Goddijn reference”).

Claims 1 has been amended as shown above. Supports for the amendments can be found in, for example, Figures 4-8 showing the protein localizations produced by constructs A-D and the description in Example 4, ¶¶ 53 and 54. Claims 7-9, 13, 15, and 17-29 all depend from claim 1, either directly or indirectly.

The amendments to claim 1 have limited the α -TIP cytoplasmic tail (CT) to be used in the system of tobacco seeds, and require the transmembrane domain (TMB) sequence and α -TIP CT sequence “serve as anchors for delivering the target protein to subcompartments of protein storage vacuoles bypassing Golgi of tobacco seeds, wherein at least part the target proteins is separated from the anchors” (emphases added).

None of the prior art of record teaches or suggests the added limitations, either alone or in combination.

The Jiang reference does not disclose or suggests a result in the tobacco cells transfected with the construct comprising the alpha-Tip CT that indicates target proteins separated from the anchors and found in the cell soluble (CS) fraction. In other words, the Jiang reference does not teach or suggest that the target proteins should be separated from the anchors in the real protein storage vacuoles (PSVs) of tobacco cells, much less PSVs of tobacco seeds, and release to the CS component.

In addition, the mechanism of the two pathways—endoplasmic reticulum (ER) via Golgi to lytic vacuoles (LV) and a direct ER to PSV pathway—as suggested in the Jiang reference does not cover the technical features recited in the present claim 1. There is no teaching or suggestion

in the Jiang reference that proteins expressed in tobacco seeds with a seed specific promoter can be directed by the α -TIP CT sequence bypassing the Golgi into a PSV crystalloid.

None of the other cited references discloses or suggests these missing limitations either.

Therefore, claim 1 is not obvious over the Jiang reference in view of the Zheng reference and the Goddijn reference, and is thus allowable.

All other pending claims (7-9, 13, 15, and 17-29) are dependent on claim 1, either directly or indirectly. Therefore, they are patentable over the Jiang reference in view of the Zheng reference and the Goddijn reference at least for the same reason as for claim 1.

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Conclusion

In light of the above amendments and remarks, the Examiner is respectfully requested to reconsider the present application, withdraw the rejections, and prepare a Notice of Allowability allowing all the pending claims (1, 7-9, 13, 15, and 17-29).

The payment of fee for a one-month extension of time accompanies this paper. The Commissioner is hereby authorized to charge any additional fees which are presently required, or credit any overpayment, to Deposit Account No. 13-0017.

Respectfully submitted,

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